7.04 CERTIFICATES OF INSURANCE AND RENEWAL CERTIFICATES

A. The certificates for each insurance policy required by this Article 7.00 shall be signed by a person authorized by that insurer and licensed by the State of California.

ARTICLE 8.00 - INDEMNIFICATION OF HOLD HARMLESS AGREEMENT

8.01 GENERAL

A. Consultant agrees to indemnify and hold harmless the City, its officers, agents and employees from and against any and all claims, costs, suits and damages, including attorneys fees, arising from the negligent acts, errors or omissions, or willful misconduct of Consultant associated with this Project.

B. City agrees to indemnify and hold harmless the Consultant, its officers, agents and employees from and against any and all claims, costs, suits and damages, including attorneys fees, arising from the negligent acts, errors or omissions, or willful misconduct of the City associated with this Project.

ARTICLE 9.00 - SUSPENSION, TERMINATION OR ABANDONMENT OF WORK

9.01 SUSPENSION OF WORK

A. The City may order the Consultant, in writing, to suspend. delay or interrupt all or any part of the work of this Agreement for the period of time the City determines, in its sole discretion, is appropriate. Such written notice will be given at least ten (10) working days prior to the date on which the City wishes to suspend, delay or interrupt.

B. If the performance of all or any part of the work under this Agreement is suspended, delayed or interrupted for more than thirty (30) consecutive calendar days and such suspension, delay or interruption is not due to the fault or negligence of the Consultant, the Consultant will be compensated for services performed prior to notice of such suspension, delay or interruption. Compensation to the Consultant will be based on work performed prior to the effective date of the suspension, delay or interruption less all previous payments. The Consultant shall not perform further work under this Agreement after the effective date of the suspension, delay or interruption until receipt of written notice from the City to resume performance.

C. When the work is resumed, the Consultant will be entitled to an equitable

adjustment in the Maximum Contract Sum and time extension, as appropriate, for any increase in the cost of performance of this Agreement caused by the suspension, delay or interruption. This Agreement will be modified in writing accordingly.

D. No adjustment to this Agreement will be made under this section for any suspension, delay or interruption for which an equitable adjustment to the Maximum Contract Sum or a time extension, or both, is provided for or excluded under any other clause of this Agreement.

E. A claim under this section will not be allowed for any costs incurred by the Consultant during the thirty (30) calendar days following the date of suspension, delay or interruption, except for previously obligated project related costs such as housing rental agreements, which have not been directed to be demobilized by written notice of the City or which cannot be terminated without incurring a premium cost. Such date will be deemed to commence on the date the Consultant receives a written notice of suspension from the City in writing of the act involved, whichever notice occurs first.

F. A claim under this section will not be allowed unless such claim is submitted by the Consultant to the City within thirty (30) calendar days after the termination of the suspension, delay or interruption, but not later than the date of final payment to the Consultant under this Agreement.

9.02 ABANDONMENT OF WORK

A. This Agreement may be terminated by the City upon not less than seven (7) calendar days written notice to the Consultant in the event the Project is abandoned.

B. If the Project is abandoned under this section, the rights and obligations of the parties, including, but not limited to, compensation to be paid to the Consultant, will be the same as if this Agreement had been terminated pursuant to the Termination for Public Convenience provisions of 9.04 hereinbelow.

9.03 CITY'S RIGHT TO TERMINATE AGREEMENT

A. If the Consultant:

1. Materially fails to perform, through no act or fault of the City, any of the obligations under this Agreement;

2. Disregards laws, ordinances, regulations or orders of any public authority having jurisdiction; or

3. Makes an assignment for the benefit of creditors without the previous written consent of the City, except to a financial institution authorized to do business in the state of California;

the City may, by serving seven (7) calendar days advance written notice to the Consultant, terminate this Agreement and, at the City's option, take over the work and prosecute the same to completion by agreement with another party or otherwise or delete the remaining work. Any extra costs or damages to the City will be deducted from any money due or coming due to the Consultant under this Agreement.

B. Upon delivery by the City to the Consultant of a termination notice, the Consultant shall discontinue all services affected by the termination, unless the notice directs otherwise.

C. If the City terminates this Agreement for a material breach the Consultant shall not be entitled to receive any further payments under this Agreement until all work has been fully performed. The Consultant shall bear any extra expenses incurred by the City in completing the work, including, but not limited to, all increased costs for completing the work, and all damages sustained by the City by reason of such refusal, neglect, failure or discontinuance of work by the Consultant. After all the work contemplated under this Agreement has been completed, the City will calculate the total expenses and damages for the completed work. In no event, however, will any amount be paid to the Consultant for anticipated profit on performed or unperformed services or other work as of the effective date of termination. If the total expenses and damages exceed the unpaid balance, the Consultant shall be liable to the City and pay the differences to the City on demand. Notwithstanding the forgoing, in the event of a dispute of a material breach ending in arbitration as provided herein, resulting in a determination that damages have occurred within the control of the Consultant, then such damages for which the Consultant shall be liable shall not exceed the lesser of (i)25% of the Maximum Contract Sum or (ii) 25% of remaining fees which would have been due the Consultant upon completion of the Contract.

D. If the termination for default has been issued and it is later determined for any reason that the Consultant was not in default, the rights and obligations of the parties, including, but not limited to, compensation to be paid to the Consultant, shall be the same as if the termination has been pursuant to the provisions of 8.04 hereinbelow. This shall include termination for default because of failure to prosecute the work.

E. The rights and remedies of the City in this section are in addition to any other rights and remedies provided by law except as limited under this Agreement.

F. The Consultant shall not be considered in default in the performance of its obligations under this Agreement, or any of them, to the extent that performance of such obligations, or any of them, is prevented or delayed by any cause, existing or future, which is beyond the reasonable control of the Consultant.

G. Delays arising from the actions or inactions of one or more of the Consultant's principles, officers, employees, agents, consultants or subconsultants are expressly recognized to be within the Consultant's control and shall be considered for purposes of the default provisions of this Agreement to be delays arising from the actions or inactions of the Consultant.

H. Notwithstanding any of the foregoing,:

1. If Consultant fails to perform in accordance with this Agreement an the City notifies the Consultant of the specific deficiency in writing, Consultant will have a reasonable opportunity to cure the condition. Consultant shall commence to cure the condition in a manner approved by City within five (5) business days of receipt of notice specifying the default. Consultant shall diligently proceed to cure.

2. If Consultant fails to make a reasonable effort to cure and fails to diligently proceed to cure within said five (5) business days notwithstanding the City's notice, City may terminate the Consultant for failure materially to perform in accordance with this Agreement, pursuant to Article 8.00 of this Agreement.

9.04 TERMINATION FOR PUBLIC CONVENIENCE

A. The City may terminate this Agreement, in whole or in part, whenever:

1. The Consultant is prevented from proceeding with the Scope of Work by reason of a preliminary, special or permanent restraining order or injunction of a court of competent jurisdiction where the issuance of such restraining order or injunction is caused by acts or omissions of persons other than the Consultant

2. The City elects to terminate in accordance with the provisions of 9.02 hereinabove; or

3. The City determines that termination is in the best interest of the City.

B Upon termination, the Consultant will be compensated for services performed prior to termination. Payment for partially completed lump sum items, or any phase of the Scope of Work, will be in the proportion that the partially completed work, or the phase of work, is to the total lump sum item, or total phase of work, as the case may be, less all previous payments. To the extent not paid for as provided above, the City will pay the Consultant an amount covering all direct costs associated with the deleted work actually incurred and for reasonable profit for services or other work performed up to the effective date of the termination and reasonable incidental close-out costs. Payment for any partially completed work, including direct costs associated therewith, will not exceed one hundred percent (100%) of the original Maximum Contract Sum as modified by any change orders, prorated for that portion of the Agreement. No claim for damages of any kind or for loss of anticipated profits on deleted or uncompleted work will be allowed because of the termination.

9.05 CONSULTANT'S RIGHT TO TERMINATE AGREEMENT

If the work under this Agreement is stopped, suspended, delayed or terminated for a period of thirty (30) consecutive calendar days through no act or fault of the Consultant or its consultants or subconsultants, or their agents or employees; or if the City has failed substantially to perform in accordance with the terms and conditions of this Agreement through no act or fault of the Consultant, then the Consultant may upon seven (7) additional calendar days written notice to the City terminate this Agreement and recover from the City payment for all services performed prior to such notice, together with reasonable profit and damages, but not exceeding 100% of the Maximum Contract Sum as modified by any Change Order.

9.06 OWNERSHIP OF DOCUMENTS

A. All materials, information, products, work, documents, studies, surveys, drawings, maps, plans, specifications, reports or other data or material, whether finished, unfinished or draft, developed, prepared, completed or acquired by the Consultant for the Work under this Agreement, including, without limitation, the original data, studies, surveys, reports, correspondence, memoranda, maps, models, photographs, drawings and audio or video recordings, but excluding proprietary management systems utilized by the Consultant, shall become the property of City and shall be delivered to the City upon completion or termination of this Agreement under any provision of this Article 9.00, whichever occurs first. Consultant may make and retain copies of all materials at Project expense.

B. The Consultant shall not be liable for damages, claims or losses arising out of any reuse of any management methods or procedures, materials, information, products, work, documents, studies, surveys, drawings, maps, plans, specifications, reports

or other data or material as specified herein on this Project or on any other project subsequent to completion or termination.

C. Upon termination of this Agreement and payment of fees outstanding, all finished or unfinished materials, products, work, documents, studies, surveys, drawings, maps, plans, specifications, reports or other data prepared by or for the Consultant for the work under this Agreement shall be submitted to the City.

ARTICLE 10.00 - MISCELLANEOUS PROVISIONS

10.01 OTHER CONTRACTS

The City may undertake or award other contracts for additional work related to the Project. The Consultant shall fully cooperate with such other consultants or contractors and with the City's employees and shall carefully adapt scheduling and performing the work under this Agreement to accommodate such other work. The Consultant shall not commit and shall use its reasonable efforts not to permit any act that interferes with the performance of such work by other contractors or the City's employees.

10.02 INDEPENDENT CONTRACTOR

The Consultant represents that it is fully experienced and properly qualified to perform the class of work provided for herein, and that it is properly equipped, organized and financed to perform such work. The Consultant shall maintain complete control over its employees and all of its subconsultants and shall assume responsibility for acts or omissions of its consultants or subconsultants and of persons either directly or indirectly employed by them, as it is for the acts or omissions of persons directly employed by the Consultant. Nothing contained in this Agreement shall create any contractual relation between the City and any consultant or subconsultant of the Consultant or create any obligation on the part of the City to pay or to see to the payment of any sums to any consultant or subconsultant of the Consultant. The Consultant shall perform all work under this Agreement in accordance with its own methods subject to compliance with the terms and conditions of this Agreement.

Consultant is and shall be an independent contractor and not an agent of the City hereunder. However, the Consultant is expected to work closely with City staff to meet all project requirements and the overall schedule and work. The express or implied direction by City of anything in connection with, or pursuant to, this Contract, shall not waive any responsibility of Consultant set out in Article 2.00, nor waive any rights or remedies of City, nor be a defense of any negligent action or omission of Consultant herein.

10.03 ASSUMPTION OF RISK

Any work undertaken by the Consultant under this Agreement which requires prior review and approval by the City shall be at the sole risk and expense of the Consultant if such prior review and approval by the City is not obtained.

10.04 STANDARDS OF PROFESSION

The Consultant shall perform the work under this Agreement in a manner consistent with that level of care and skill ordinarily exercised by other Consultants currently practicing in the same locality of the Consultant and under similar conditions and circumstances.

10.05 NOTICES

Any notice to be given under this Agreement shall be deemed to have been given when received by the party to whom it is directed by personal service, hand delivery, telecopy (facsimile), or by enclosing the same in a sealed envelope, postage prepaid, and depositing the same in the United States Postal Service, registered, return receipt requested, addressed to City at its address stated herein, or to Consultant at its address stated herein, as the case may be.

City:

Richard E. Wilken
Deputy Director
Communications & Electrical Division
1220 Caminito Centro
San Diego, CA 92102-1801
(619) 525-8650 Voice
(619) 525-8693 Facsimile

Consultant:

John B. Richards
Keller and Heckman
1001 G. Street
Washington, D.C. 20001
(202) 434-4100 Voice
(202(434-4653 Facsimile

10.06 WAIVER OF BREACH

A. Waiver of the right to pursue any remedies for breach of any obligation or condition hereunder shall not be deemed to be a waiver of the right to pursue any remedy for any other breach or breaches including, but not limited to, subsequent breaches of the same obligation or condition.

B. The rights and remedies of the City and the Consultant as provided in any provision of this Agreement are in addition to any other rights and remedies provided by law or under any other provision of this Agreement.

C. City review, approval, acceptance or payment for any of the Consultant's services under this Agreement shall not be construed to operate as a waiver of any rights of the City under this Agreement or of any cause of action arising out of the performance of this Agreement, and the Consultant shall be and remain liable in accordance with the terms of this Agreement and applicable law for all damages to City caused by the Consultant's performance or failures to perform under this Agreement.

10.07 THIRD PARTY EXCLUSION

This Agreement shall not create any rights or benefits or create a contractual relationship with or a cause of action in favor of a third party against the City or the Consultant, except such other rights, benefits or contractual relationships as may be specifically called for herein.

10.08 SUCCESSORS AND ASSIGNEES

The City and the Consultant, respectively, bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this Agreement. Neither the City nor the Consultant shall assign, transfer, convey or otherwise dispose of this Agreement or its interest in or to the same, or any part thereof, without the prior written consent of the other party, nor shall the Consultant assign any moneys due or to become due without the prior written consent of the City, except to a financial institution authorized to do business in the state of California.

10.09 CITY'S RIGHT TO AUDIT

The Consultant shall maintain, and the City shall have access to and the right to examine, at the City's cost, any directly pertinent estimates, documents, papers, payroll records, employee time sheets, expense vouchers and any other records of the Consultant and its consultants and subconsultants involving transactions relating to the Agreement, and to

make excerpts, copies and transcriptions, at the City's cost, for the purpose of verifying the Consultant's claims for services and expenses pertaining to this Agreement for up to three (3) years after termination or expiration of this Agreement. Any audit conducted by the City will not unreasonably interfere with the Consultant's work. In the event a discrepancy in excess of 5% is determined to exist, following the City's exercise of its right to audit, the costs of the audit shall be paid by Consultant.

10.10 COVENANT

The Consultant covenants that it presently has no interest and that it will not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of work required to be performed under this Agreement. Consultant further covenants, to its reasonable knowledge and ability, that in the performance of said work, no person, consultant or subconsultant having any such interest shall be employed or contracted with for services.

10.11 GOVERNING LAW

This Agreement shall be construed in accordance with, and governed by, the laws of the state of California. Venue shall lie in San Diego, California Superior Court.

10.12 SEVERABILITY

If any term, provision, covenant or condition of this Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, all other terms, provisions, covenants and conditions of this Agreement shall remain in full force and effect and shall in no way be affected, impaired or invalidated. .

In the event that any portion or all of this Agreement is held to be void or unenforceable, the parties agree to negotiate in good faith to reach an equitable agreement which shall effect the intent of the parties as set forth in this Agreement.

10.13 TITLES

The titles or captions set forth in this Agreement are for general reference and convenience only, do not in any way limit or amplify the terms and provisions hereof, and shall have no effect on its interpretation.

10.14 SCOPE OF AGREEMENT

This is the final, complete and entire agreement between the City and the Consultant and it supersedes any and all prior or contemporaneous negotiations, agreements, communications or representations between the parties, either oral or in writing, relating

to the subject matter of this Agreement, except as expressed herein. This Agreement may be amended at any time and from time to time but only by written instrument signed by both the City and the Consultant.

10.15 CERTIFICATION

The individuals who have affixed their signatures below certify and attest which is empowered to execute this Agreement and act on behalf of and bind the party in whose name this Agreement is executed.

10.16 NOTICE TO PROCEED

The parties to this Agreement understand and agree that execution of this Agreement by the City is not a Notice to Proceed on the Scope of Work of this Agreement. A Notice To Proceed will be given by the City to the Consultant after receipt and approval of all insurance requirements specified in this Agreement or equivalent predictions.

10.17 FEDERAL, STATE AND LOCAL REGULATIONS

Consultant agrees to comply with Title VII of the Civil Rights Act of 1964 (as amended), the California Fair Employment Practices Act, and such other Federal, State laws and local regulations as may apply. failure to comply with these laws and regulations may result in termination of this Agreement and preclude any future work for the City for a period of one to two years.

10.18 ATTORNEY'S FEES

In the event that suit is brought upon this Agreement to enforce the terms hereof, the prevailing party shall be entitled to a reasonable sum as attorney's fees.

ARTICLE 11.00 - REMEDIES

11.01 GENERAL

City's exclusive remedies with respect to the Services, whether in contract or otherwise, shall be limited to those expressly set forth herein, regardless of fault, negligence or strict liability. Consultant shall in no event be responsible for nor held liable for consequential damages including, without limitation, liability for loss of the Project, loss of profit or business interruption, unless such damage is the result of the acts, omissions or negligence of the Consultant, and City hereby releases, indemnifies, and agrees to hold Consultant harmless from any claims, liabilities and causes of actions, including attorneys' fees, arising from City's use of the project, or any part thereof.

ARTICLE 12.00 - INTERPRETATION

12.01 CHOICE OF LAW

This Agreement shall be governed by and interpreted in accordance with the laws of the state of California. Unless otherwise specifically stated to the contrary, indemnities against, releases from, assumption of and limitations on liability expressed in this Agreement, as well as waivers of subrogation rights, shall apply even in the event of the fault, negligence, or strict liability is limited or assumed, or against whom rights of subrogation are waived, and shall extend to the officers, directors, employees, agent and related entities of such parties.

ARTICLE 13.00 - COMPLETE AGREEMENT

13.01 GENERAL

This Agreement contains the entire agreement between the parties and supersedes all agreements or representations made prior to the date of execution of this Agreement regarding the subject matter of this Agreement. There is no other written or oral understanding between the parties. No modification, amendment or alteration of this Agreement shall be valid unless it is in writing and signed by the parties hereto.

2 GHz MICROWAVE RELOCATION CONSULTANT AGREEMENT

IN WITNESS THEREOF, this Agreement is executed by City, authorizing such execution, and by Consultant.

City of San Diego, CA

By: _____

George Loveland
Name

General Services Director
for City Manager

5.18.95
Date Signed

Keller and Heckman

By: _____

John B. Richards
Name

Partner
Title

May 1, 1995
Date Signed

Approved as to form and legality:

John W. Witt, City Attorney

By: _____

Approved as to form and legality
this 17th day of May 1995
JOHN W. WITT, City Attorney

By _____
Deputy City Attorney

ATTACHMENT F

STANFORD UNIVERSITY
DEPARTMENT OF ECONOMICS
STANFORD, CALIFORNIA 94305-6072

Paul R. Milgrom
Shirley and Leonard Ely, Jr. Professor of Humanities and Sciences

Phone: (415) 723-3397
Fax: (415) 725-5702

September 21, 1995

To Whom It May Concern:

I have been asked by Pacific Bell to estimate two kinds of losses that the government and consumers may suffer as a result of the current rules governing microwave relocation. The first is the loss of revenue to the Treasury in auctions for the C, D, E, and F-band PCS licenses resulting from the demands by microwave licensees for premium payments before relocating microwave links. Recent demands from microwave incumbents have called for payments of $1 million per link, compared to an estimated actual relocation cost of $200,000 for an average link. Such demands directly reduce the value of the PCS licenses to potential buyers. If recent demands are a fair indication of eventual settlements and if premium costs are shared equally among affected PCS providers, the loss of auction revenues would amount to $1.9 billion. Smaller demands or compromise settlements could halve the cost to about $900 million.

The second kind of loss is that suffered by consumers as a result of delays in initiating PCS services. The current rules encourage microwave users to utilize threats of delay to increase their bargaining power, since delays are costless to them but costly to the PCS providers. The loss in consumer surplus from delaying the introduction of PCS services on the A and B bands nationwide, conservatively estimated, amounts to $120 million per month of delay, while the loss of delays in introducing services in the C band amounts to at least $24 million per month. Under less conservative estimates, the costs could be several times higher than this.

The estimates of consumer losses in this letter were revised on September 21 to reflect corrected data about cellular telephone demand in 1994, as explained in the first footnote of the attached statement. Additional background for the calculations reported above are provided in the attached statement.

Respectfully submitted,

Paul Milgrom

Statement of Paul R. Milgrom*

1. My name is Paul R. Milgrom. I am the Shirley and Leonard Ely, Jr. Professor of Humanities and Sciences and Professor of Economics at Stanford University in Stanford, California, 94305.

2. I received an A.B. degree in Mathematics from the University of Michigan and an M.S. in Statistics and a Ph.D. in Business from Stanford University. My academic specialty is microeconomic theory and comparative economic institutions. From 1990-1994, I was coeditor of the *American Economic Review*. I have also served on the editorial boards of several other economics journals. I am the author of more than sixty books and articles and have been the recipient of numerous awards and honors, including Fellowships in the American Academy of Arts and Sciences and the Econometric Society. I have also received Fellowship grants from the John Simon Guggenheim Foundation, the Center for Advanced Study in the Behavioral Sciences, and the Center for Advanced Studies in Jerusalem. My curriculum vitae is attached.

3. I have devoted considerable time and attention to telecommunications issues, especially ones concerning Personal Communications Services (PCS). Since November of 1993, I have filed nine affidavits or statements with the Federal Communications Commission regarding PCS-related matters, including two that were co-authored with my colleague, Stanford Professor Robert Wilson. I acted as an adviser to Pacific Telesis Mobile Services during the recently completed auction #4 of broadband PCS licenses. In 1994, I filed an affidavit in connection with the motion to terminate the MFJ. In 1984, when the MFJ precipitated a restructuring of certain contracts between AT&T and the Southern New England Telephone Company (SNET), I advised SNET about the renegotiation of its contracts.

4. My other experience with regulatory matters includes testimony given to the Federal Energy Regulatory Commission concerning pricing on the Trans-Alaska pipeline, testimony at trial

---

*This statement was revised on September 21, 1995 to reflect corrected estimates of cellular demand for 1994 based on information supplied by the Cellular Telecommunications Industry Association. My previous calculations were based on estimated annual revenues of $6.5 billion; the revised calculations use CTIA's report of 1994 revenues of $14.2 billion.

concerning the economics of the insurance contracting, and written testimony concerning environmental regulation filed with the National Oceanographic and Atmospheric Administration (NOAA).

5. I have been asked by Pacific Telesis Mobile Services (PTMS), the high bidder in auction #4 for the B-band licenses covering the Los Angeles and San Francisco MTAs, to comment on the likely costs to consumers and the government resulting from bargaining with microwave licensees whose operations would suffer interference from PCS operations. These costs include reductions in future government auction revenues and probably also include reductions in consumer surplus resulting from delays in the introduction of PCS services

6. Any such calculations necessarily rest on a forecast of the outcome of bargaining between the PCS providers and the microwave licensees. Data about PCS providers willingness to pay and bargaining postures are confidential and unavailable, so I have had to rely on information about the microwave providers initial demands. A second estimation issue arises from the fact that most existing microwave links are vulnerable to interference from more than one PCS frequency. In those situations, my estimate of the revenue impact on future auctions will depend on how the costs of relocating microwave links will be apportioned among the interfering operations. For these calculations, I have used detailed information about the number of links receiving interference from each spectrum band. I have assumed that where multiple services would interfere with a single link, any payments to microwave licensees are shared equally among interfering service providers.

Summary

7. In my opinion, the losses associated with any delay in beginning PCS services caused by negotiations between point to point microwave users and PCS licensees would be very large. The financial demands of microwave users reduce the attractiveness of PCS licenses yet to be auctioned. If the recent demands made by microwave licensees are representative of bargaining outcomes, losses in government auction revenues from sales of the C, D, E, and F-bands as a result of payments to microwave users would total between $930 million and $1.9 billion. Delays in

delivering PCS service as a result of protracted bargaining are likewise costly. I measure these costs in terms of the loss of consumer surplus resulting in a one-month delay in the service initiation for all licenses in the A and B bands or in the C band. Using the most conservative estimation procedure, losses in consumer surplus accrue at a rate of $120 million per month of delay for the A and B-band services, and $24 million per month for the C-band service. Less conservative, but rather more likely estimation scenarios entail losses many times higher: $490 million per month of delay for the A and B-bands and $76 million per month for the C-band.

Bargaining with Point to Point Microwave Users

8. PCS service rules provide that licensees must relocate microwave links with which their services interfere. There are about 4,500 such links in the U.S., affecting all six PCS bands, of which some 3227 affect the C, D, E and F bands. The rules provide commercial microwave users a 2-year voluntary relocation period followed by a 1-year mandatory relocation period. For public service entities there is a 3-year voluntary period followed by a 2-year mandatory period. Many microwaves users are now requesting payments of between $400,000 and $800,000 per link above and beyond the provision of comparable facilities to move before the mandatory deadline.

9. The sequential and multilateral nature of these negotiations makes it likely that bargaining will lead to a large amount of lost value for PCS licensees. Fearing that the first settlements will set a precedent for later ones, PCS providers are likely to resist initial demands for extra compensation, while microwave licensees have little or nothing to lose by delaying their relocation. Initial bargaining is therefore likely to be difficult, making costly delays probable.

10. If the rules governing microwave relocation allow the incumbents to extract premiums, bidders for the C, D, E, and F-bands will factor those premiums into their business plans as a cost of initiating service. For example, a company that expects to have to pay premium costs of $400,000 per link for 100 links to initiate service in some BTA will subtract the $40,000,000 in premium payments in calculating the value of the license. Its maximum price would be correspondingly reduced. Since it is the maximum price of the bidder with the second highest value

that determines the auction price, the net result would be a $40,000,000 reduction in the price for this individual license. Assuming that the microwave licensee negotiates a premium payment of $400,000 to $800,000 per link in addition to the direct relocation costs and that the premium cost for each link is shared equally among the PCS licensees whose services would interfere, and recognizing that 3,227 links interfere with the C, D, E, and F-bands nationwide, I expect that the total auction prices of the licenses in the C, D, E and F bands would be reduced by $930 million to $1.9 billion.[1]

Consumer Surplus Computations[2]

11. The largest cost of any delay in instituting PCS services would be borne by consumers in the wireless industry, for whom access to PCS services would be delayed and who would pay higher prices for cellular services due to the absence of PCS competition. Estimates of the loss of consumer surplus per month from delayed entry depend on assumptions about the nature of competition and the effectiveness of regulation in the industry, as well as on forecasts of demand. However, even the most rough-and-ready estimates show that the cost is very large. Currently, cellular service is provided by what is essentially a duopoly. If the introduction of the PCS A and B-band competitors into the wireless services market led to price reductions of just 10% with no consequent expansion in demand it would still increase consumer surplus by an amount equal to 10% of the existing industry revenues. Cellular telecommunications industry revenues for 1994 amounted to approximately $14.2 billion,[3] leading to an estimated gain for consumers of $1.42 billion per year. Similarly, if entry of the C-band provider led to price reduction of 2%, the estimated gain for consumers would be $284 million per year.

---

[1]This calculation uses information supplied by Pacific Bell Mobile Services about which particular PCS bands would interfere with each particular microwave links.

[2]These calculations incorporate and extend the ones in my statement to the FCC of May, 1995.

[3]*The Wireless Communications Industry*, Donaldson, Lufkin & Jenrette, Winter 1994-1995.

12. The preceding estimates, however, are probably too low. Because even conservative assumptions about demand can lead to very large estimates of the loss of consumer surplus from delayed entry, I have constructed my estimates using conservative assumptions about demand. First, despite the persistent growth of demand recently experienced and forecast by almost every pundit, I assume that the scale of the wireless market is fixed at the level attained in the summer of 1994. Second, despite estimates which show that demand for wireless services has tended to be quite inelastic, I assume that wireless service demand has unitary elasticity, which is the average elasticity for all products in the economy.[4] Third, in order to focus on the beneficial effects of competition for consumers, I assume that there is an absence of regulation that either raises or depresses prices. Finally, I assume that the parties have equal costs and engage in Cournot competition, which is a moderate and widely used specification of the intensity of competition among wireless providers.

13. With these assumptions, the eventual effect on consumer surplus of increasing the number of competitors in a market from two to four -- the entry of the PCS A and B-band licensees -- would be a fifty percent (50%) increase in the volume of wireless calling, a thirty three percent (33%) reduction in the prices of wireless services, and an increase in consumer surplus of approximately $5.9 billion per year. The entry of a fifth competitor, the C-band licensee, would increase volume by an additional seven percent (7%) and lower prices by an additional six percent (6%) leading to an increase in consumer surplus of approximately of $920 million per year. Delaying the day when these new entries occur amounts to delaying the time at which consumers first begin enjoying this enormous benefit.

14. The preceding calculation has assumed that the market adjusts immediately to the entry of new competitors and that the size of the market at the time of entry is the same as its current size.

---

[4] In an affidavit to the Commission dated September 14, 1994, Professor Jerry Hausman estimated the price-elasticity of demand to be -0.402 with a standard error of .155. As the customer base for wireless services expands, demand may become more elastic. Since more elastic demand leads to lower estimates of the additional consumer surplus from increased competition, I have used such an estimate here.

More realistically, we would expect a delayed adjustment and a growing market. If, as expected, the rate of growth in the relevant future period exceeds the real rate of interest, then accounting for both of these effects would further increase the consumer surplus estimates.

15. It is most likely that, if the rules remain unchanged, both of the kinds of costs described in this memorandum will be incurred. There will certainly be a loss of auction revenue to the government amounting to hundreds of millions, or perhaps billions of dollars. In addition, there will probably be a loss of consumer surplus amounting to hundreds of millions of dollars.

Respectfully submitted,

Paul Milgrom

Paul R. Milgrom

Colloquy on Relocation of Incumbent Users of PCS spectrum band Breaux/Hollings

stand with me in protecting what is important to our country. I urge you to vote to save the COPS Program.

LEGAL SERVICES TO NATIVE AMERICANS

Mr. INOUYE. Mr. President, I seek a few moments in order to seek clarification from my esteemed colleague, the senior Senator from Alaska, with regard to language that is contained in an amendment proposed by my colleague. When the Subcommittee on Commerce, Justice, State and the Judiciary met to consider H.R. 2076, the appropriations bill for fiscal year 1996, Senator STEVENS proposed an amendment to the amendment proposed by the esteemed chairman of the full committee, Senator HATFIELD, relating to the provision of legal services as it affects Native American households.

Mr. STEVENS. Mr. President, my amendment, which was adopted by the Subcommittee on Commerce, Justice, State and Judiciary on September 7, 1995, provides that in States that have significant numbers of eligible Native American households, grants to such States would equal an amount that is 140 percent of the amount such states would otherwise receive. My amendment was necessary in order to prevent a serious reduction in legal services to Native Americans. Under current law, there is a separate, additional appropriation for legal services to the Native American community. The Legal Services Corporation is also given the flexibility to allocate additional resources to States like Alaska, which experience increased costs due to the difficulty of providing legal services to remote populations, many of which are comprised of Native Americans. Given the fact that the Legal Services Corporation, including the separate Native American appropriation, was eliminated the committee's bill, my amendment was necessary in order to ensure the continued provision of legal services to the Native American community.

Mr. INOUYE. Mr. President, I wish to express my deep appreciation to my colleague from Alaska for his efforts in this area, and for recognizing that the significant needs for legal assistance in Native American communities span a broad range of issues, from housing and sanitation to health care and education. In my own State of Hawaii, Native Hawaiians comprise less than 13 percent of the population, but represent more than 40 percent of the prison inmate population. Native Hawaiians have twice the unemployment rate of the State's general population and represent 30 percent of the State's recipients of aid to families with dependent children. Over 1,000 Native Hawaiians are homeless, representing 30 percent of the State's homeless population. Native Hawaiians have the lowest life expectancy, the highest death rate, and the highest infant mortality rate of any other group in the State. Moreover, they have the lowest education levels and the highest suicide rate in Hawaii.

Mr. President, in my State, we have the Native Hawaiian Legal Corp. [NHLC], a nonprofit organization established to provide legal services to Native Hawaiian community. NHLC has a 20 year history of providing exemplary legal assistance to Native Hawaiians, and it has long been affiliated with the Native American Rights Fund. Fifteen percent of NHLC's annual funding comes from the Native American portion of the Legal Services Corporation budget. It is my understanding that the language proposed by my esteemed colleague from Alaska is to ensure the continued provision of legal services to Native Americans that are currently being provided through a separate Native American allocation of the funding provided to the Legal Services Corporation. My question of my colleague from Alaska is whether it is his intent that Native Hawaiians would continue to be eligible to receive funds appropriated for the provision of legal services under your amendment, consistent with the current situation under the Legal Services Corporation?

Mr. STEVENS. I thank the Senator for his earlier comments. My colleague from Hawaii, in his capacity as the former chairman of the Indian Affairs Committee, has traveled many, many times to my State of Alaska, and I know that he has come to appreciate the very difficult circumstances under which the vast majority of our native villages live. I know the challenges the Senator from Hawaii faces in trying to meet the needs of native communities in the State of Hawaii, and I therefore understand full well his desire to clarify the meaning of "Native American households". When I proposed this language, it was my intention to ensure that those Native American communities, including native Hawaiian households, currently being served by the Legal Services Corporation would continue to have access to legal services under the block grant approach proposed by Senator HATFIELD. Have I sufficiently addressed my colleague's concerns?

Mr. INOUYE. Mr. President, I wish to thank my colleagues from Alaska, for clarifying this matter for me. I am certain that the native Hawaiian community will be most appreciative of the Senator's clarification.

ABUSES INVOLVING MICROWAVE INCUMBENTS

Mr. BREAUX. I would like to raise an issue that has become of concern to several members of this committee on both sides of the aisle.

Previously, as chairman of this committee and of the Appropriations Subcommittee, the Senator from South Carolina was instrumental in establishing spectrum auctions for new PCS services, and was a guiding force on developing the rules that were adopted by the FCC governing relocation of microwave licensees out of this spectrum.

He is aware, as we have discussed, that certain enterprising individuals have recruited a number of microwave incumbents as clients and now seem to be manipulating the FCC rules on microwave relocation to leverage exorbitant payments from new PCS licensees.

I am advised that if this practice continues unchecked, more and more microwave incumbents are likely to employ these unintended tactics. More importantly, it will reportedly devalue spectrum in future auctions to the tune of up to $2 billion as future bidders factor this successful gamesmanship into their bidding strategy. Previously scored revenue for deficit reduction will be unfairly diverted instead into private pockets.

Would the Senator agree with me:

First, that this type of gaming of relocation negotiations was unintended, is unreasonable, and should not be permitted to continue unchecked;

Second, that the affected parties should attempt to agree on a mutually acceptable solution to this problem;

Third, that if an acceptable compromise cannot be brought forth by the affected parties within a reasonable time period, then either Congress or the FCC should address this matter as quickly as possible with appropriate remedies?

Mr. HOLLINGS. I thank my colleague for raising this issue. As he noted, I offered an amendment on the State, Justice, Commerce Appropriations bill in 1992 on this issue. The electric utilities, oil pipelines, and railroads must have reliable communications systems. The FCC initially proposed to move these utilities' communications systems from the 2 gigahertz band to the 6 gigahertz band without ensuring that the 6 gigahertz band would provide reliable communications.

My amendment, which the FCC subsequently adopted in its rules, guaranteed that the utilities could only be moved out of the 2 gigahertz band if they are given 3 years to negotiate an agreement, if their costs of moving to the new frequency are paid for, and if the reliability of their communications at the new frequency is guaranteed.

Now I understand that some of the incumbent users may be taking advantage of the negotiation period to delay the introduction of new technologies. It was certainly not my intention to give the incumbent users an incentive to delay moving to the 6 gigahertz band purely to obtain more money. I agree with my friend that the parties involved in this issue should try to work out an acceptable solution to this issue. If the parties cannot agree to work out a compromise, I believe that Congress or the FCC may need to revisit this issue.

WOMEN'S BUSINESS PROGRAMS

Mrs. HUTCHISON. Mr. President, I would like to address an important portion of the Hatfield amendment, preservation of Small Business Administration funding for women's business programs.

I believe the issue of women in business needs to be placed in the clearer context.

Debate on H.R. 2076 FY96 Commerce, Justice and State Approp Bill

STANFORD UNIVERSITY
DEPARTMENT OF ECONOMICS
STANFORD, CALIFORNIA 94305-6072

Paul R. Milgrom
Shirley and Leonard Ely, Jr. Professor
of Humanities and Sciences

Phone: (415) 723-3397
Fax: (415) 725-5702

September 21, 1995

To Whom It May Concern:

I have been asked by Pacific Bell to estimate two kinds of losses that the government and consumers may suffer as a result of the current rules governing microwave relocation. The first is the loss of revenue to the Treasury in auctions for the C, D, E, and F-band PCS licenses resulting from the demands by microwave licensees for premium payments before relocating microwave links. Recent demands from microwave incumbents have called for payments of $1 million per link, compared to an estimated actual relocation cost of $200,000 for an average link. Such demands directly reduce the value of the PCS licenses to potential buyers. If recent demands are a fair indication of eventual settlements and if premium costs are shared equally among affected PCS providers, the loss of auction revenues would amount to $1.9 billion. Smaller demands or compromise settlements could halve the cost to about $900 million.

The second kind of loss is that suffered by consumers as a result of delays in initiating PCS services. The current rules encourage microwave users to utilize threats of delay to increase their bargaining power, since delays are costless to them but costly to the PCS providers. The loss in consumer surplus from delaying the introduction of PCS services on the A and B bands nationwide, conservatively estimated, amounts to $120 million per month of delay, while the loss of delays in introducing services in the C band amounts to at least $24 million per month. Under less conservative estimates, the costs could be several times higher than this.

The estimates of consumer losses in this letter were revised on September 21 to reflect corrected data about cellular telephone demand in 1994, as explained in the first footnote of the attached statement. Additional background for the calculations reported above is provided in the attached statement.

Respectfully submitted,

Paul R. Milgrom

Statement of Paul R. Milgrom*

1. My name is Paul R. Milgrom. I am the Shirley and Leonard Ely, Jr. Professor of Humanities and Sciences and Professor of Economics at Stanford University in Stanford, California, 94305.

2. I received an A.B. degree in Mathematics from the University of Michigan and an M.S. in Statistics and a Ph.D. in Business from Stanford University. My academic specialty is microeconomic theory and comparative economic institutions. From 1990-1994, I was coeditor of the *American Economic Review*. I have also served on the editorial boards of several other economics journals. I am the author of more than sixty books and articles and have been the recipient of numerous awards and honors, including Fellowships in the American Academy of Arts and Sciences and the Econometric Society. I have also received Fellowship grants from the John Simon Guggenheim Foundation, the Center for Advanced Study in the Behavioral Sciences, and the Center for Advanced Studies in Jerusalem. My curriculum vitae is attached.

3. I have devoted considerable time and attention to telecommunications issues, especially ones concerning Personal Communications Services (PCS). Since November of 1993, I have filed nine affidavits or statements with the Federal Communications Commission regarding PCS-related matters, including two that were co-authored with my colleague, Stanford Professor Robert Wilson. I acted as an adviser to Pacific Telesis Mobile Services during the recently completed auction #4 of broadband PCS licenses. In 1994, I filed an affidavit in connection with the motion to terminate the MFJ. In 1984, when the MFJ precipitated a restructuring of certain contracts between AT&T and the Southern New England Telephone Company (SNET), I advised SNET about the renegotiation of its contracts.

---

*This statement was revised on September 21, 1995 to reflect corrected estimates of cellular demand for 1994 based on information supplied by the Cellular Telecommunications Industry Association. My previous calculations were based on estimated annual revenues of $6.5 billion; the revised calculations use CTIA's report of 1994 revenues of $14.2 billion.

4. My other experience with regulatory matters includes testimony given to the Federal Energy Regulatory Commission concerning pricing on the Trans-Alaska pipeline, testimony at trial concerning the economics of the insurance contracting, and written testimony concerning environmental regulation filed with the National Oceanographic and Atmospheric Administration (NOAA).

5. I have been asked by Pacific Telesis Mobile Services (PTMS), the high bidder in auction #4 for the B-band licenses covering the Los Angeles and San Francisco MTAs, to comment on the likely costs to consumers and the government resulting from bargaining with microwave licensees whose operations would suffer interference from PCS operations. These costs include reductions in future government auction revenues and probably also include reductions in consumer surplus resulting from delays in the introduction of PCS services

6. Any such calculations necessarily rest on a forecast of the outcome of bargaining between the PCS providers and the microwave licensees. Data about PCS providers willingness to pay and bargaining postures are confidential and unavailable, so I have had to rely on information about the microwave providers initial demands. A second estimation issue arises from the fact that most existing microwave links are vulnerable to interference from more than one PCS frequency. In those situations, my estimate of the revenue impact on future auctions will depend on how the costs of relocating microwave links will be apportioned among the interfering operations. For these calculations, I have used detailed information about the number of links receiving interference from each spectrum band. I have assumed that where multiple services would interfere with a single link, any payments to microwave licensees are shared equally among interfering service providers.

Summary

7. In my opinion, the losses associated with any delay in beginning PCS services caused by negotiations between point to point microwave users and PCS licensees would be very large. The financial demands of microwave users reduce the attractiveness of PCS licenses yet to be

auctioned. If the recent demands made by microwave licensees are representative of bargaining outcomes, losses in government auction revenues from sales of the C, D, E, and F-bands as a result of payments to microwave users would total between $930 million and $1.9 billion. Delays in delivering PCS service as a result of protracted bargaining are likewise costly. I measure these costs in terms of the loss of consumer surplus resulting in a one-month delay in the service initiation for all licenses in the A and B bands or in the C band. Using the most conservative estimation procedure, losses in consumer surplus accrue at a rate of $120 million per month of delay for the A and B-band services, and $24 million per month for the C-band service. Less conservative, but rather more likely estimation scenarios entail losses many times higher: $490 million per month of delay for the A and B-bands and $76 million per month for the C-band.

Bargaining with Point to Point Microwave Users

8. PCS service rules provide that licensees must relocate microwave links with which their services interfere. There are about 4,500 such links in the U.S., affecting all six PCS bands, of which some 3227 affect the C, D, E and F bands. The rules provide commercial microwave users a 2-year voluntary relocation period followed by a 1-year mandatory relocation period. For public service entities there is a 3-year voluntary period followed by a 2-year mandatory period. Many microwaves users are now requesting payments of between $400,000 and $800,000 per link above and beyond the provision of comparable facilities to move before the mandatory deadline.

9. The sequential and multilateral nature of these negotiations makes it likely that bargaining will lead to a large amount of lost value for PCS licensees. Fearing that the first settlements will set a precedent for later ones, PCS providers are likely to resist initial demands for extra compensation, while microwave licensees have little or nothing to lose by delaying their relocation. Initial bargaining is therefore likely to be difficult, making costly delays probable.

10. If the rules governing microwave relocation allow the incumbents to extract premiums, bidders for the C, D, E, and F-bands will factor those premiums into their business plans as a cost